Race, Postoperative Complications, and Death in Apparently Healthy Children

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abstract

BACKGROUND: That African American (AA) patients have poorer surgical outcomes compared with their white peers is established. The prevailing presumption is that these disparities operate within the context of a higher preoperative comorbidity burden among AA patients. Whether these racial differences in outcomes exist among apparently healthy children (traditionally expected to have low risk of postsurgical complications) has not been previously investigated.

METHODS: We performed a retrospective study by analyzing the National Surgical Quality Improvement Program–Pediatric database from 2012 through 2017 and identifying children who underwent inpatient operations and were assigned American Society of Anesthesiologists physical status 1 or 2. We used univariable and risk-adjusted logistic regression to estimate the odds ratios and their 95% confidence intervals (CIs) of postsurgical outcomes comparing AA to white children.

RESULTS: Among 172 549 apparently healthy children, the incidence of 30-day mortality, postoperative complications, and serious adverse events were 0.02%, 13.9%, and 5.7%, respectively. Compared with their white peers, AA children had 3.43 times the odds of dying within 30 days after surgery (odds ratio: 3.43; 95% CI: 1.73–6.79). Compared with being white, AA had 18% relative greater odds of developing postoperative complications (odds ratio: 1.18; 95% CI: 1.13–1.23) and 7% relative higher odds of developing serious adverse events (odds ratio: 1.07; 95% CI: 1.01–1.14).

CONCLUSIONS: Even among apparently healthy children, being AA is strongly associated with a higher risk of postoperative complications and mortality. Mechanisms underlying the established racial differences in postoperative outcomes may not be fully explained by the racial variation in preoperative comorbidity.

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WHAT'S KNOWN ON THIS SUBJECT: Racial differences in postoperative outcomes between white and African American patients have been mainly attributed to a greater baseline (preoperative) comorbidity burden among the latter.

WHAT THIS STUDY ADDS: Even among apparently healthy children, being African American relative to being white was associated with a threefold increased risk of postoperative death and complications. Efforts to reduce these racial disparities should look beyond the racial variation in preoperative comorbidity burden.

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That preoperative comorbidity burden is strongly associated with postoperative morbidity and mortality is well established. The converse is also generally presumed to be true given the widespread assumption that relatively healthy patients have low risk of postoperative complications.[1] However, in recent data among adults, it was suggested that postoperative mortality and morbidity occur even in the context of low preoperative comorbidity burden.[2] To date, whether the trends and associations seen in the adult surgical cohort persist in the pediatric surgical population is unknown. Most studies on pediatric postoperative mortality have included a mix of children with various baseline comorbidity burden. The reported incidence of death occurring within 30 days of a surgical procedure from these studies can vary from 0.1% to 15%.[3–5] We need to understand the incidence of postoperative mortality and morbidity among children who have mild systemic disease at the time of surgery who are expected to survive without complications.

Race is a key determinant of postoperative outcomes. In general, African American (AA) patients compared with their white peers have higher rates of postoperative morbidity and mortality.[6] This has largely been attributed to greater preoperative comorbidity burden among AA patients.[6] Whether these established racial differences in surgical outcomes exist among apparently healthy children has not been characterized. An understanding that racial differences in postoperative outcomes persist in relatively healthy children will guide remedial efforts to account for factors beyond the racial variation in preoperative comorbidity burden.

Therefore, our objective with this study was to characterize the racial differences in postoperative mortality and complications among apparently healthy children. We hypothesized that being AA relative to being white does not confer a higher risk of postoperative mortality and complications among apparently healthy children. Our overall aim was not just to highlight traditional, well-known race-stratified surgical outcomes but specifically to assess whether poor baseline health alone explains why AA children are more likely to die in surgical care.

METHODS

Study Design and Study Population

We performed a retrospective study by analyzing the American College of Surgeons National Surgical Quality Improvement Program–Pediatric (NSQIP-P) database from 2012 through 2017. Detailed information about the NSQIP-P, including inclusion criteria, data collection, and management, have been described in previous publications.[6,7] Briefly, the NSQIP-P is a multi-institutional reporting system designed to collect risk-adjusted surgical outcomes among children undergoing surgical procedure across 186 medical centers in the United States. NSQIP-trained clinical nurse specialists collect data using standardized formats and continually review data accuracy by referring to strict definitions. Children were followed-up from admission to 30 days after surgery. Given that the NSQIP-P database is completely deidentified, our study was not considered human subjects research by our institutional review board and was deemed exempt from the formal informed consent process. We included in our analyses children (age ≤17 years of age) with American Society of Anesthesiologists (ASA) physical status 1 or 2 who underwent inpatient surgical procedures. We did not include outpatient surgical cases because their mortality rates were low. Specifically, only 4 deaths (n = 0 for white children; n = 4 for AA children) were observed among the outpatient cohort, making it impossible to perform a parsimonious multivariable analysis for this group. Furthermore, documentation of many of the secondary outcomes in the present report are only possible in the inpatient settings.

Outcome Measures

Our primary outcome was overall 30-day in-hospital postoperative mortality. Our secondary outcomes were overall 30-day postoperative complications and serious adverse events (SAEs). As previously described, we derived the 30-day SAE rate that represents a subset of 30-day postoperative complications.[8] SAE was considered as the occurrence of any of the following postoperative events: cardiac arrest, sepsis, readmission, or reoperation. We evaluated all outcome measures as a function of race by comparing AA to white children. Race may be self-assigned or assigned by institutional staff, consistent with internal guidelines of participating hospitals.[9] As in previous studies, we did not include in the comparison children who were not AA or white because they represented a heterogeneous group that comprised Asian American, American Indian, Hispanic, and Native Hawaiian children.[8,10]

Statistical Analysis

All analyses were performed with Stata/IC 15 (Stata Corp, College Station, TX) with a statistical significance considered as P value $<.05$. We used logistic regression to estimate the crude odds ratios (cORs) and adjusted odds ratios (aORs) and their 95% confidence intervals (CIs) as a measure of the strength of association between race and postsurgical outcomes. When categorizing continuous variables, we accounted for their potential nonlinearity instead of assigning arbitrary cut points. Nonlinearity was assessed by using fractional

polynomials, after which appropriate cut points were derived on the basis of the plot of the fractional polynomial model. We adjusted the analysis for the following covariates because they are known sources of variation in the occurrence of postoperative mortality and complications: age (>12 months: older children; 1–12 months: infants; <1 month: neonates); sex (male versus female); year of procedure (2012, 2013, 2014, 2015, 2016, 2017); and case urgency (elective, urgent, emergent).[8,11] We also controlled for operating time (<250 minutes versus ≥250 minutes) and work relative value unit (RVU) (≤25, 25–50, >50) to account for the complexity of surgical procedures.[12] We accounted for the intrinsic risk of surgical procedures by dividing them into risk tertiles (low, intermediate, and high) according to the empirical complication rates for each *Current Procedural Terminology* (CPT) code.[13] However, we did not retain this variable in the multivariable analysis because it caused a multicollinearity with other indicators of surgical risk already included in the model: emergent or urgent status and operating time.

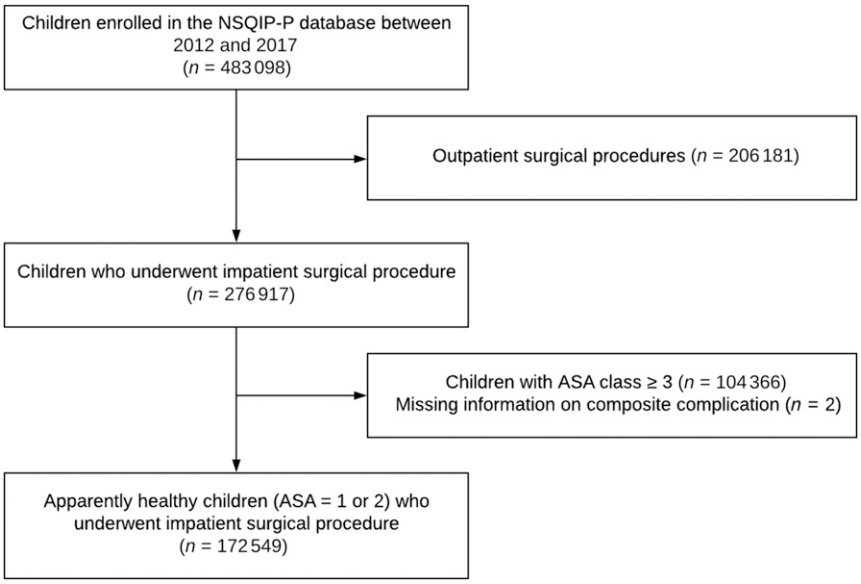

FIGURE 1
Flowchart summarizing the sample derivation.

RESULTS

Between 2012 and 2017, a total of 276 917 children underwent inpatient surgical procedures; of those, we excluded 104 368: 104 366 had ASA class >2, and 2 were missing information on composite 30-day complications (Fig 1). This left us with 172 549 children in the analytical sample, whose characteristics are summarized in Table 1. Overall, 11.4% children were AA and 70.1% were white. More than half of the children were male (54.2%). Most of the children in our sample were >12 months (80.8%); only 3.4% were neonates, and 15.8% were infants. AA children were more likely than white children to be assigned higher ASA classification status (ASA class 2: 73.5% vs 68.2%). Overall, AA children and their white peers were comparable with regard to the distribution of age, sex, and baseline comorbidities. Similarly, the CPT risk tertiles did not differ by meaningful amounts across racial groups.

The incidence of postoperative outcomes comparing AA to white children is summarized in Fig 2. Compared with their whites peers, AA children were more likely to develop the following postsurgical events: 30-day mortality (0.07% vs 0.02%), composite postoperative complications (16.87% vs 13.80%), composite SAEs (6.17% vs 5.71%), bleeding requiring transfusion (9.91% vs 6.90%), and sepsis (0.48% vs 0.37%). The following events were also more likely to occur among AA children compared with their white peers: unplanned reoperation (2.95% vs 2.47%) and unplanned tracheal reintubation (0.32% vs 0.18%).

The univariable and multivariable effect sizes of the relationship between surgical outcomes and race are summarized in Table 2. The overall incidence of 30-day mortality was 0.02%. Compared with their white peers, AA children had 3.48 times the odds of dying within 30 days after surgery (cOR: 3.48; 95% CI: 1.76–6.87). Overall, 13.9% of children developed postoperative complications within 30 days of surgery. Being AA conferred 27% relative greater odds of developing postoperative complications, relative to being white (cOR: 1.27; 95% CI: 1.22–1.32). Analyzing a subset of possible complications revealed that SAE occurred among 5.7% of children. Being AA conferred 8% relative higher odds of developing SAE, compared with being white (cOR: 1.08; 95% CI: 1.02–1.15). These results did not change substantially after adjusting for covariates that include sex, age, RVU, year of procedure, case urgency and operating time.

Several associations emerged in the multivariable analyses of the relationship between surgical outcomes and clinical characteristics of children. Although the odds of SAE were relative greater among male patients (aOR: 1.08; 95% CI: 1.04–1.13), being male conferred 13% relative lower odds of

TABLE 1 Characteristics of Apparently Healthy Children Who Underwent Inpatient Surgery (NSQIP-P 2012–2017)

	Overall (N = 140 666)	White (n = 120 991)	AA (n = 19 675)
	No. Children (%)[a]	No. Children (%)[a]	No. Children (%)[a]
Sociodemographic characteristics			
Age, mo			
>24 (older children)	113 773 (80.9)	97 746 (80.8)	16 027 (81.5)
1–12 (infants)	22 140 (15.7)	19 154 (15.8)	2986 (15.2)
<1 (neonates)	4753 (3.4)	4091 (3.4)	662 (3.4)
Male sex	76 319 (54.3)	65 545 (54.2)	10 774 (54.8)
Perioperative profile			
ASA class			
1	43 643 (31.0)	38 420 (31.8)	5223 (26.5)
2	97 023 (69.0)	82 571 (68.2)	14 452 (73.5)
RVU			
≤25	118 255 (84.1)	102 199 (84.5)	16 056 (81.6)
25–50	22 056 (15.7)	18 495 (15.3)	3561 (18.1)
>50	355 (0.3)	297 (0.2)	58 (0.3)
Year of surgery			
2012	16 119 (11.5)	14 075 (11.6)	2044 (10.4)
2013	20 012 (14.2)	17 293 (14.3)	2719 (13.8)
2014	19 899 (14.1)	17 229 (14.2)	2670 (13.6)
2015	25 211 (17.9)	21 392 (17.7)	3819 (19.4)
2016	29 308 (20.8)	25 202 (20.8)	4106 (20.9)
2017	30 117 (21.4)	25 800 (21.3)	4317 (21.9)
Case urgency			
Elective	85 406 (60.7)	72 980 (60.3)	12 426 (63.2)
Urgent	32 090 (22.8)	28 027 (23.2)	4063 (20.7)
Emergent	23 170 (16.5)	19 984 (16.5)	3186 (16.2)
CPT risk tertiles			
1	45 875 (32.6)	39 365 (32.5)	6510 (33.1)
2	51 527 (36.6)	45 277 (37.4)	6250 (31.8)
3	43 264 (30.8)	36 349 (30.0)	6915 (35.2)
Operating time >250 min	12 883 (9.2)	10 686 (8.8)	2197 (11.2)
Preoperative comorbidities			
Cardiac risk factors	6479 (4.6)	5427 (4.5)	1052 (5.3)
Gastrointestinal disease	22 366 (15.9)	19 111 (15.8)	3255 (16.5)
Childhood malignancy	2533 (1.8)	2259 (1.9)	274 (1.4)
Sepsis	19 857 (14.1)	17 497 (14.5)	2360 (12.0)
Seizure disorder	3335 (2.4)	2747 (2.3)	588 (3.0)
Structural pulmonary abnormalities	4540 (3.2)	3818 (3.2)	722 (3.7)
Structural CNS abnormality	14 320 (10.2)	12 424 (10.3)	1896 (9.6)
Chronic lung disease	1374 (1.0)	1054 (0.9)	320 (1.6)

We retained children (age ≤17 y old) with ASA class 1 or 2 who underwent inpatient surgical procedures. CNS, central nervous system.
[a] Percentages are for the column.

developing the composite 30-day complications (aOR: 0.87; 95% CI: 0.85–0.90). Compared with elective case patients, urgent case patients had relative greater odds of developing SAEs (aOR: 1.18; 95% CI: 1.12–1.24). Similarly, compared to elective procedures, emergency procedures were associated with 7% relative greater odds of SAEs (aOR: 1.07; 95% CI: 1.01–1.14). A surgical procedure time of 250 minutes or longer was associated with relative greater odds of postoperative complications (aOR: 3.39; 95% CI: 3.25–3.53) and SAEs (aOR: 1.39; 95% CI: 1.29–1.49). Not surprisingly, both younger age and higher work RVU conferred relative greater odds of any of the surgical outcomes that we evaluated.

DISCUSSION

We examined the association of race with postoperative complications and 30-day mortality in apparently healthy children (ASA 1 or 2) undergoing inpatient surgery from 2012 to 2017. Our analyses revealed that even among children deemed to be apparently healthy, AA children had a higher risk of postoperative complications and mortality compared with their white peers. Specifically, the risk of postoperative mortality for apparently healthy AA children was ~3.5 times higher than for their white peers.

Despite ongoing improvements in surgical care and apparent rarity of postsurgical mortality,[3] racial and ethnic disparities in postoperative morbidity and mortality remain significant and persistent.[11,14,15] That AA patients have poorer health outcomes than their white peers is

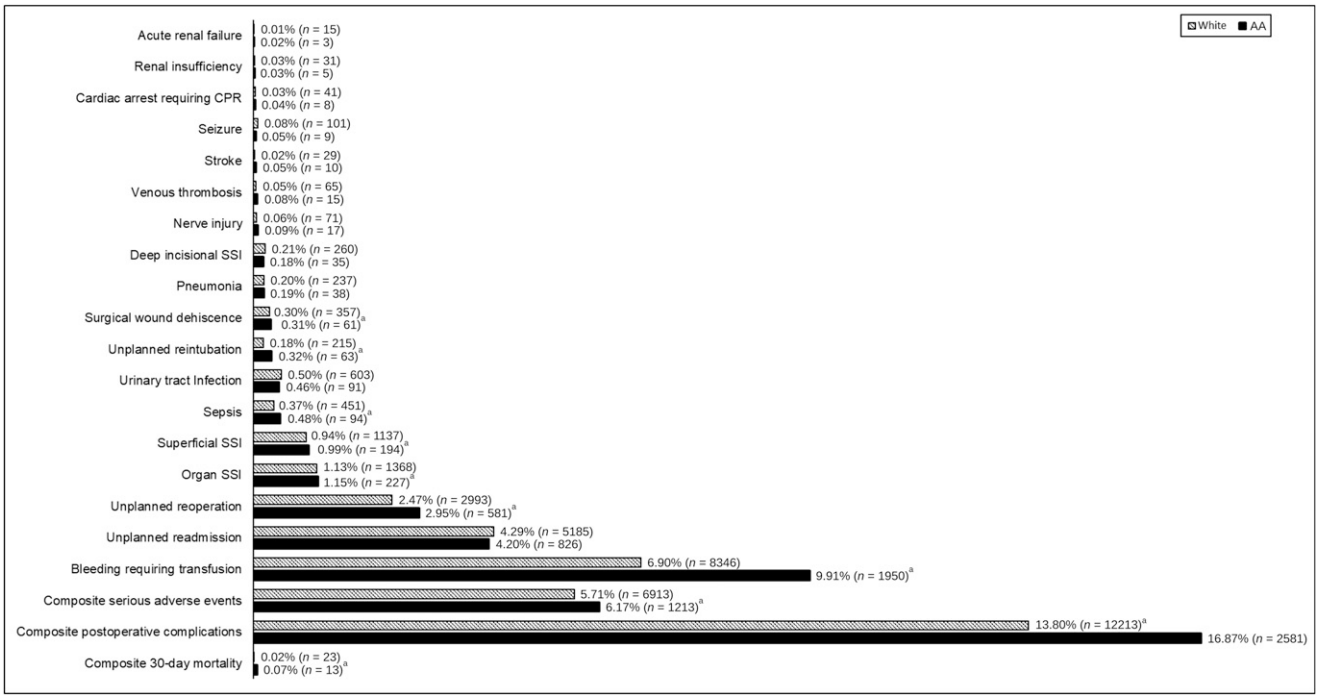

FIGURE 2

Incidence of postoperative mortality and complications according to race among 140 666 apparently healthy children (13.9% AA children; 86.1% white children). CPR, cardiopulmonary resuscitation; SSI, surgical site infection. [a] Indicates that the difference in the incidence was significant at an α level of .05.

not novel. Several investigators have shown that AA patients of all age groups are more likely to suffer postsurgical complications and die after surgery than their white peers.[10,16–19] Several putative mechanisms including poverty, lack of access to health care and other resources, biological predisposition, and a higher preoperative comorbidity burden among AA have been used to explain the frequently observed racial disparity in health care outcomes.[10,17,19]

Our findings are distinctive because the outcomes of inpatient surgery among apparently healthy (ASA 1 or 2) patients have rarely been described, and our study is the first used to evaluate the impact of race on postsurgical outcomes in apparently healthy children. In a recent study of a large cohort of adults (ASA status 1 or 2) who underwent various noncardiac surgical procedures,[2] overall 30-day mortality was expectedly low (0.7%). Our findings confirm and expand on this earlier study from an adult surgical cohort. We found that 30-day postoperative complication and mortality rates were similarly low in our study cohort. However, AA children still had a threefold higher risk of postoperative death despite this being a relatively healthy cohort of children with a low preoperative comorbidity burden. This has serious implications for the perioperative care of AA children because our analyses suggest that preoperative comorbidity burden may only partly explain the racial disparity in postsurgical outcomes in children.[10]

We also found that any of our defined postoperative complications and SAEs were more likely to occur in AA children. This is consistent with previous reports in which other investigators indicate that AA patients are significantly more likely to develop postsurgical complications.[10,16–19] Although mechanisms underlying racial disparity in postoperative complications and mortality remain largely speculative and hypothesis based, it is suggested in our study that complications do occur even in apparently healthy surgical patients and AA are at a distinct disadvantage. One possible mechanism for the excess mortality rates among AA children may be the higher likelihood of SAEs given that these postoperative complications are often strongly associated with postoperative mortality.[20] Efforts to reduce postoperative complications should help to reduce overall postsurgical mortality especially among AA children. Future investigations into why complications occur and whether there are racial differences in survival after major postoperative complications may provide some insights into the pervasive racial differences in

TABLE 2 Univariable and Multivariable Analyses of 30-Day Mortality, Composite 30-Day Complications, and SAEs (NSQIP-P 2012–2017)

	30-d Mortality			Composite 30-d Complications			SAEs		
	No. Mortality/*n* (%)[a]	cOR (95% CI)	aOR (95% CI)	No. Complications/*n* (%)[a]	cOR (95% CI)	aOR (95% CI)	No. SAEs/*n* (%)[a]	cOR (95% CI)	aOR (95% CI)
Race									
White	23/120 991 (0.02)	Referent	Referent	16 698/120 991 (13.8)	Referent	Referent	6913/120 991 (5.7)	Referent	Referent
AA	13/19 675 (0.07)	3.48 (1.76–6.87)	3.43 (1.73–6.79)	3320/19 675 (16.9)	1.27 (1.22–1.32)	1.18 (1.13–1.23)	1213/19 675 (6.2)	1.08 (1.02–1.15)	1.07 (1.01–1.14)
Sex									
Female	22/79 046 (0.03)	Referent	Referent	12 824/79 046 (16.2)	Referent	Referent	4364/79 046 (5.5)	Referent	Referent
Male	21/93 503 (0.02)	0.81 (0.44–1.47)	0.64 (0.34–1.17)	11 288/93 503 (12.1)	0.71 (0.69–0.73)	0.87 (0.85–0.90)	5597/93 503 (6.0)	1.09 (1.05–1.13)	1.08 (1.04–1.13)
Age, mo									
>12	17/139 380 (0.01)	Referent	Referent	19 352/139 380 (13.9)	Referent	Referent	7730/139 380 (5.5)	Referent	Referent
1–12	14/27 276 (0.05)	4.21 (2.07–8.54)	4.68 (2.26–9.69)	4006/27 276 (14.7)	1.07 (1.03–1.11)	1.17 (1.13–1.22)	1664/27 276 (6.1)	1.11 (1.05–1.17)	1.13 (1.07–1.20)
<1	12/5893 (0.20)	16.73 (7.99–35.04)	14.89 (6.65–33.30)	754/5893 (12.8)	0.91 (0.84–0.98)	1.07 (0.98–1.16)	567/5893 (9.6)	1.81 (1.66–1.98)	1.76 (1.60–1.92)
Work RVU									
≤25	30/145 945 (0.02)	Referent	Referent	12 686/145 945 (8.7)	Referent	Referent	8068/145 945 (5.5)	Referent	Referent
25–50	11/26 124 (0.04)	2.05 (1.03–4.09)	1.87 (0.87–3.99)	11 322/26 124 (43.3)	8.03 (7.79–8.28)	5.22 (5.04–5.40)	1835/26 124 (7.0)	1.29 (1.23–1.36)	1.22 (1.15–1.30)
>50	2/480 (0.42)	20.35 (4.85–85.40)	5.04 (1.11–22.80)	104/480 (21.7)	2.91 (2.34–3.61)	2.15 (1.71–2.70)	58/480 (12.1)	2.35 (1.78–3.09)	1.80 (1.36–2.38)
Year of surgery									
2012	5/19 287 (0.03)	Referent	Referent	2701/19 287 (14.0)	Referent	Referent	1168/19 287 (6.1)	Referent	Referent
2013	6/23 944 (0.03)	0.97 (0.29–3.17)	0.98 (0.30–3.22)	3404/23 944 (14.2)	1.02 (0.96–1.07)	1.07 (1.00–1.13)	1429/23 944 (6.0)	0.98 (0.91–1.07)	0.99 (0.91–1.07)
2014	5/23 843 (0.02)	0.81 (0.23–2.79)	0.83 (0.24–2.87)	3394/23 843 (14.2)	1.02 (0.97–1.08)	1.02 (0.97–1.09)	1303/23 843 (5.5)	0.90 (0.83–0.97)	0.90 (0.83–0.98)
2015	14/30 597 (0.05)	1.77 (0.64–4.90)	1.76 (0.63–4.90)	4291/30 597 (14.0)	1.00 (0.95–1.06)	1.02 (0.96–1.07)	1758/30 597 (5.7)	0.95 (0.88–1.02)	0.95 (0.88–1.03)
2016	7/36 064 (0.02)	0.75 (0.24–2.36)	0.81 (0.26–2.54)	4911/36 064 (13.6)	0.97 (0.92–1.02)	1.01 (0.96–1.07)	2111/36 064 (5.9)	0.96 (0.90–1.04)	0.98 (0.91–1.05)
2017	6/38 814 (0.02)	0.60 (0.18–1.95)	0.64 (0.20–2.11)	5411/38 814 (13.9)	0.99 (0.95–1.05)	1.04 (0.98–1.10)	2192/38 814 (5.6)	0.93 (0.86–1.00)	0.94 (0.88–1.01)
Case urgency									
Elective	24/104 575 (0.02)	Referent	Referent	18 482/104 575 (17.7)	Referent	Referent	5931/104 575 (5.7)	Referent	Referent
Urgent	11/40 118 (0.03)	1.19 (0.59–2.44)	1.47 (0.67–3.19)	3441/40 118 (8.6)	0.44 (0.42–0.45)	0.98 (0.94–1.02)	2440/40 118 (6.1)	1.08 (1.03–1.13)	1.18 (1.12–1.24)
Emergent	8/27 856 (0.03)	1.25 (0.56–2.79)	1.27 (0.54–2.98)	2189/27 856 (7.9)	0.40 (0.38–0.42)	0.85 (0.80–0.89)	1590/27 856 (5.7)	1.01 (0.95–1.07)	1.07 (1.01–1.14)
Operating time, min									
>250	39/156 706 (0.02)	Referent	Referent	16 706/156 706 (10.7)	Referent	Referent	8746/156 706 (5.6)	Referent	Referent
≥250	4/15 827 (0.03)	1.02 (0.36–2.84)	1.12 (0.36–3.48)	7402/15 827 (46.8)	7.36 (7.11–7.63)	3.39 (3.25–3.53)	1214/15 827 (7.7)	1.41 (1.32–1.50)	1.39 (1.29–1.49)

We retained in our sample children (age <18 y old) with ASA class 1 or 2 who underwent inpatient surgical procedures. We used logistic regression to estimate the cORs and aORs. Multivariable analyses included all covariates in the table.

[a] Percentages are for the row.

postsurgical complications and mortality in children.

Several other putative mechanisms for racial disparities in health care outcomes have been proposed in previous studies.[10,11,21] In these studies, authors identified physician-patient communication, health care provider bias, resource allocation, household income, and access to specialized care as important factors influencing surgical outcomes.[10,11,21] Although our report is based on apparently healthy children, it may be also possible that differences in the phenotypic presentation of surgical disease is at play.[22] In any case, racial disparity in health care outcomes is a multifactorial challenge that encompasses the interface of patient factors, family dynamics, social determinants, health care provider factors, and hospital variables. To be effective, efforts to reduce disparity in health outcomes (including postsurgical morbidity and mortality) will have to be multipronged.

Despite the strength and robustness of the NSQIP-P database (nationally representative, clinically abstracted, highly reliable, risk-adjusted, and case mix–adjusted surgical data) and our choice of unambiguous categorical outcome variables (postoperative mortality and complications), certain limitations of the present analyses must be considered. Although widely used,[1,23] we caution that the ASA physical status scheme was not designed to be used as a tool for predicting postoperative morbidity and/or mortality. Furthermore, given that the NSQIP-P is a surgical database and surgeons may consistently downgrade the ASA score,[24] we cannot exclude the possibility of misclassification errors due to ASA status assignment. However, we do not know of any clinical reason why this potential ASA status downgrade would systematically favor 1 racial group over another. Indeed, recent data revealed that AA children were more likely to be assigned a higher ASA status than their white peers.[25] Thus, AA children in our study cohort may not be as sick or their white peers may be sicker than the assigned ASA status.

We also acknowledge that we did not explore the site of care where these patients received their surgeries given that previous investigators have shown that minority patients tend to receive care in low-quality, minority-serving hospitals.[26] Site of care is a critical variable that appears to mediate the pathway of the association of race with postoperative morbidity and mortality.[27] Unfortunately, the NSQIP-P program strongly discourages attempts to identify specific hospitals in the database. Given that site of care is an important potentially modifiable variable and the established knowledge that disparities in surgical care is a pervasive and long-standing problem in our health care system, improving access to high-quality care across every hospital is an important step to reduce the persistent racial disparity in health outcomes in the US.

CONCLUSIONS

In this study of apparently healthy (ASA 1 or 2) children who underwent inpatient noncardiac surgeries, postsurgical complications and mortality rates were expectedly low. Nonetheless, being AA was significantly associated with increased rates of postoperative complications and mortality. These results may help guide preoperative discussions about risks and may guide authors of future studies to elucidate the mechanisms underlying racial differences in postsurgical outcomes in children. We must however caution that the findings of the present analyses do not establish causality between race and postsurgical complications or mortality. Rather, in this study, we highlight the strong association between racial category and postoperative morbidity and mortality in apparently healthy AA and white children.

ABBREVIATIONS

AA: African American
aOR: adjusted odds ratio
ASA: American Society of Anesthesiologists
CI: confidence interval
cOR: crude odds ratio
CPT: *Current Procedural Terminology*
NSQIP-P: National Surgical Quality Improvement Program–Pediatrics
RVU: relative value unit
SAE: serious adverse event

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